Grape 1 / GNU Radio System Components List (Rev 8, 20 Oct 2023)
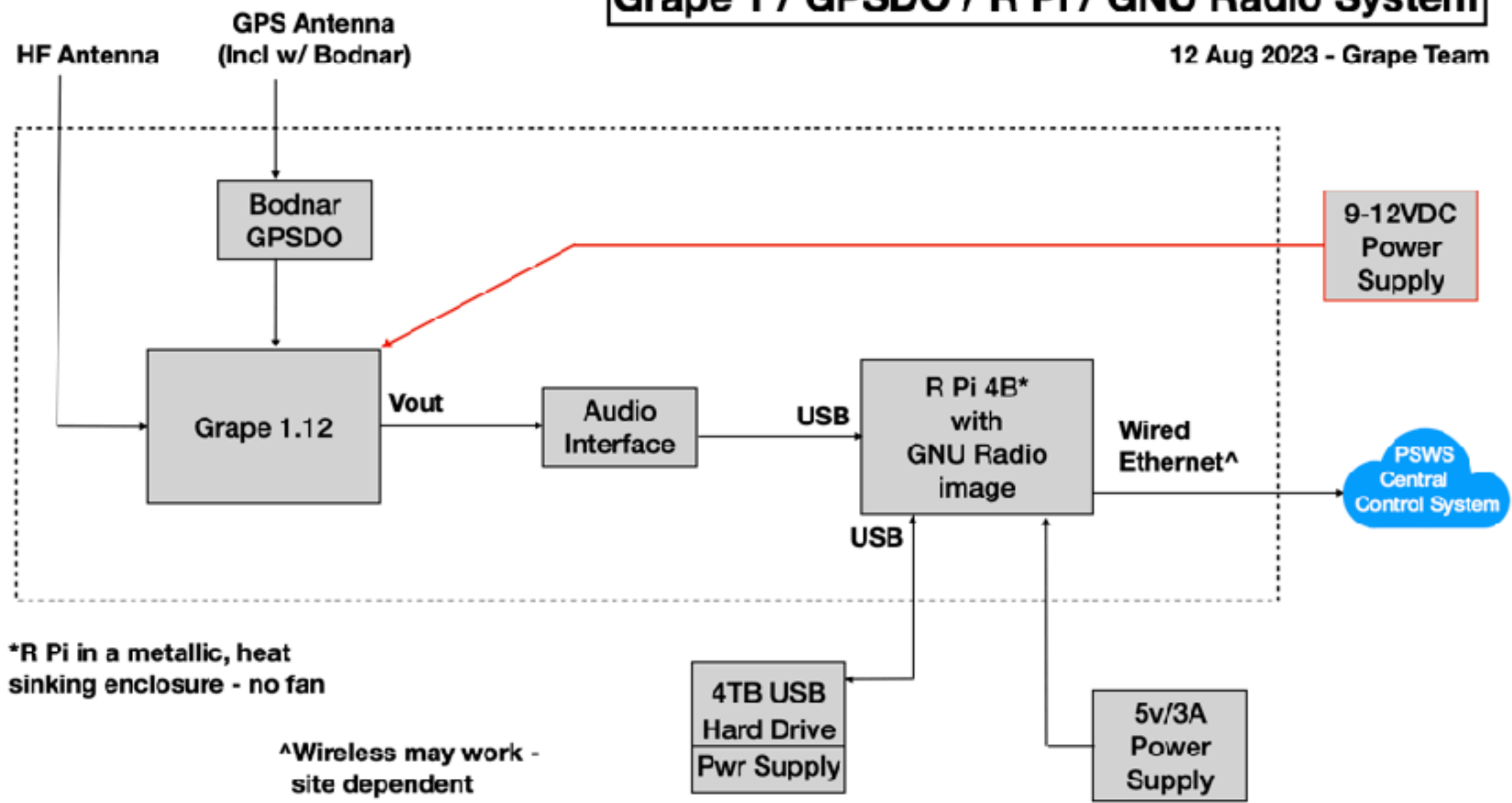
Ref #	Qty	Component	Source	Part Number or Description
Radio Frequency Components				
1	1	Grape Version 1.12 Low-IF Receiver	Build-it-yourself per hamsci.org/grape1	Grape 1.12
2	1	Power Supply, 6-12V, 100mA	Various	Power supply for Grape 1. Supply must be clean, free of noise and excessive ripple - linear architecture strongly preferred. EX: Jameco 4.5W AC-to-DC Regulated Linear Wall Adapter 9 Volt 0.5 Amps https://www.jameco.com/z/GPU410900500WD00-Jameco-ReliaPro-4-5W-AC-to-DC-Regulated-Linear-Wall-Adapter-9-Volt-0-5-Amps_1953639.html
3	1	Leo Bodnar GPS Disciplined Oscillator with GPS Antenna	leobodnar.com	Mini Precision GPS Reference Clock http://www.leobodnar.com/shop/index.php?main_page=product_info&cPath=107&products_id=301
4	1	SMA Male to SMA Male Cable (4 inch)	Various, including amazon.com	DZS Elec 2pcs RG316 Wire Jumper 15cm SMA Male to SMA Male with Connecting Line RF Coaxial Coax Cable Antenna Extender Cable Adapter Jumper https://www.amazon.com/gp/product/B072FS4WMK/ref=ppx_yo_dt_b_asin_title_o04_s01?ie=UTF8&psc=1
5	1	SMA Male to SO-239 Cable (6 inch)	Various, including amazon.com	DHT Electronics Handheld Antenna Cable SMA Male to UHF SO-239 Female Connectors 6'' Pack of 2 for Amplifier https://www.amazon.com/gp/product/B00COW5E3A/ref=ppx_yo_dt_b_asin_title_o06_s00?ie=UTF8&psc=1
6	1	HF Antenna	Build or buy to suit - every QTH is different	Generally, a simple wire antenna should work for 5, 10 and 15 MHz. Every QTH is different - the person hosting the Grape should have a good idea what will work for them based on past experience.
Computing Components				
7	1	Raspberry Pi 4B with 4GB (or greater) memory	Various, including amazon.com	Raspberry Pi 4 Model B 2019 Quad Core 64 Bit WiFi Bluetooth (4GB) (or greater) https://www.amazon.com/Raspberry-Model-2019-Quad-Bluetooth/dp/B07TC2BK1X/ref=sr_1_1_mod_primary_new?keywords=Raspberry+Pi&qid=1690313529&refinements=p_89:Raspberry+Pi,p_36:1253505011&rnid=386442011&s=electronics&sbo=RZvfv//HxDF+O5021pAnSA==&sr=1-1
8	1	Raspberry Pi Power Supply, 5V / 3A	Various, including amazon.com	Raspberry Pi 15W USB-C Power Supply US - Black https://www.amazon.com/Raspberry-Pi-USB-C-Power-Supply/dp/B07W8XHMJZ/ref=sr_1_2?keywords=Raspberry+Pi&qid=1690313470&refinements=p_89:Raspberry+Pi,p_36:1253503011&rnid=386442011&s=electronics&sr=1-2
9	1	Raspberry Pi Passive Cooling Case	Various, including amazon.com	Geekworm for Raspberry Pi 4 Armor Case, Pi 4 Computer Model B Armor Aluminum Alloy Passive Cooling Case Compatible with Raspberry Pi 4 Model B Only https://www.amazon.com/Geekworm-Raspberry-Computer-Aluminum-Compatible/dp/B07VD568FB?ref_=ast_sto_dp&th=1&psc=1
10	1	64 GB micro SD Card (requires GNU Radio Image to be loaded and verified)	Blank micro SD card: Various, including amazon.com	SAMSUNG PRO Endurance 64GB MicroSDXC Memory Card with Adapter for Dash Cam, Body Cam, and security camera – Class 10, U1, V10 (MB-MJ64KA/AM) https://www.amazon.com/SAMSUNG-Endurance-MicroSDXC-Adapter-security/dp/B09W9XYQCQ?ref_=ast_sto_dp&th=1
Data Storage and Buffering Components				

Ref #	Qty	Component	Source	Part Number or Description
11	1	4 TB Hard Drive (high endurance)	Various, including amazon.com	Western Digital 4TB WD Purple Surveillance Internal Hard Drive HDD - SATA 6 Gb/s, 256 MB Cache, 3.5" - WD43PURZ Suggest purchasing directly from Western Digital to avoid possible counterfeits: https://www.westerndigital.com/products/internal-drives/wd-purple-sata-hdd#WD43PURZ
12	1	Powered SATA to USB Hard Drive Case, Adapter, Power Supply	Various, including amazon.com	SABRENT USB 3.0 to SATA External Hard Drive Lay-Flat Docking Station for 2.5 or 3.5in HDD, SSD [Support UASP] (EC-DFLT) https://www.amazon.com/Sabrent-External-Lay-Flat-Docking-EC-DFLT/dp/B00LS5NFQ2?th=1
Audio Components				
13	1	Sabrent USB Audio Interface	Various, including amazon.com	SABRENT USB External Stereo Sound Adapter for Windows and Mac. Plug and Play No Drivers Needed. (AU-MMSA) https://www.amazon.com/gp/product/B00IRVQ0F8/ref=ppx_yo_dt_b_asin_title_o00_s00?ie=UTF8&psc=1
14	1	3.5mm Stereo Cable, Male to Male, Grape to Audio Interface	Various, including amazon.com	Belkin Mini-Stereo Audio Cable for Smartphones, Tablets, and MP3 Players, 3.5mm Jack (various lengths available, modify to suit) https://www.amazon.com/gp/product/B0047741BG/ref=ppx_yo_dt_b_asin_title_o03_s00?ie=UTF8&psc=1
Miscellaneous Components				
15	1	Micro HDMI to HDMI cable (male to male)	Various	For connection of Raspberry Pi to a monitor.
16	1	Wireless Keyboard w/Bluetooth dongle	Various	(Wired components would require USB port and power from the Pi)
17	1	Wireless Mouse w/Bluetooth dongle	Various	(Wired components would require USB port and power from the Pi)
18	1	Powered USB 3.0 Hub	Various	Optional - May be needed if 3 to 4 USB ports in use on the R Pi
19	1	Audio Isolation Transformer	Various	Optional - For insertion between the Grape 1 and the Audio Interface. May be useful in solving 'ground loop' noise problems.
20	1	Lightning Arrestor	Various	Optional - For insertion between the HF antenna and the Grape 1 antenna input.
21	1	115VAC Power strip or equivalent	Various	Optional - Might ease problems associated with having 3 wall warts in close proximity.

12 Aug 2023 - Grape Team

HF Antenna

GPS Antenna
(Incl w/ Bodnar)

Bodnar
GPSDO

9-12VDC
Power
Supply

Grape 1.12

Vout

Audio
Interface

USB

R Pi 4B*
with
GNU Radio
image

Wired
Ethernet^

PSWS
Central
Control System

USB

*R Pi in a metallic, heat
sinking enclosure - no fan

^Wireless may work -
site dependent

4TB USB
Hard Drive
Pwr Supply

5v/3A
Power
Supply